



Evolution of pathogens in a man-made world

Author(s): Lebarbenchon C, Brown SP, Poulin R, Gauthier-Clerc M, Thomas F
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Abstract:

Human activities have resulted in substantial, large-scale environmental modifications, especially in the past century. Ecologists and evolutionary biologists are increasingly coming to realize that parasites and pathogens, like free-living organisms, evolve as the consequence of these anthropogenic changes. Although this area now commands the attention of a variety of researchers, a broad predictive framework is lacking, mainly because the links between human activities, the environment and parasite evolution are complex. From empirical and theoretical examples chosen in the literature, we give an overview of the ways in which humans can directly or indirectly influence the evolution of different traits in parasites (e.g. specificity, virulence, polymorphism). We discuss the role of direct and indirect factors as diverse as habitat fragmentation, pollution, biodiversity loss, climate change, introduction of species, use of vaccines and antibiotics, ageing of the population, etc. We also present challenging questions for further research. Understanding the links between anthropogenic changes and parasite evolution needs to become a cornerstone of public health planning, economic development and conservation biology.

Source: <http://dx.doi.org/10.1111/j.1365-294X.2007.03375.x>

Resource Description

Exposure :

weather or climate related pathway by which climate change affects health

Ecosystem Changes, Extreme Weather Event, Temperature

Extreme Weather Event: Flooding

Temperature: Fluctuations

Geographic Feature:

resource focuses on specific type of geography

None or Unspecified

Geographic Location:

resource focuses on specific location

Global or Unspecified

Health Co-Benefit/Co-Harm (Adaption/Mitigation):



specification of beneficial or harmful impacts to health resulting from efforts to reduce or cope with greenhouse gases

A focus of content

Health Impact:

specification of health effect or disease related to climate change exposure

Infectious Disease

Infectious Disease: Foodborne/Waterborne Disease, Vectorborne Disease

Foodborne/Waterborne Disease: General Foodborne/Waterborne Disease

Vectorborne Disease: General Vectorborne

Intervention:

strategy to prepare for or reduce the impact of climate change on health

A focus of content

Medical Community Engagement:

resource focus on how the medical community discusses or acts to address health impacts of climate change

A focus of content

Resource Type:

format or standard characteristic of resource

Review

Timescale:

time period studied

Time Scale Unspecified